The Relationship Between Structure and Function in Seed Dispersal and Seed Germination©

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A seed can be defined as a dormant embryonic plant, neatly packed in a seed coat together with nutrient reserves required during germination. In structural terms, there is a vast variation in the size and shape of the embryo, the composition and quantity of the nutrient reserves, the construction of the seed coat and in some seeds also other floral structures surrounding the mature seed. These "other structures" are often included in the concept seed and to avoid any confusion, the term "propagule" is used when referring to such seeds. In this paper the term seed will be used in the strict sense and any additional structures surrounding the seed proper will be described and related to a possible function. The discussion will focus mostly on seeds of indigenous plant species, including seeds with arils, recalcitrant seeds, seed dormancy (exogenous and endogenous dormancy), seed banks, seeds of parasitic plants, and orchid seed.

Greenhouse Technology©

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Greenhouse technology has improved dramatically over the years. Two of the main criteria that have influenced the ability to grow crop in the greenhouse are the type of structure and the material covering the structure.

THE GREENHOUSE STRUCTURE

A good greenhouse can only be measured by its ability to cost effectively ventilate and to control both temperature and humidity. The most basic structure is a tunnel and the next step is a force-ventilated structure. Today, the most cost-effective type of structure is a naturally ventilated structure with a roof vent at the highest point of the apex. The size and position of the vent are of utmost importance to enable the structure to maintain an even climate for the crop.

The combination of natural ventilation together with high pressure fogging gives ultimate control coupled with low running costs. Natural ventilation combined with high pressure fogging works on the same principal as the pad and fan system. The objective is to increase humidity in order to lower temperature. For every 7% increase in humidity the temperature is lowered by ±1 ºC. The high pressure fogging system needs to produce droplets of an average of 10 µm. The droplet size is important to prevent wetting the plants and enable uniform cooling to take place throughout the greenhouse.

The system will start operating if the humidity is too low or the temperature is too high, thus giving the added advantage of increasing humidity when necessary. The result is a less stressed plant and better growth. The roof vent also enables the greenhouse to be dehumidified when heating is being used. This allows the greenhouse to operate at an optimum climate 24 h a day. The viability of projects is dependent on maximum production with the lowest possible running cost.